DOCUMENT RESUME

ED 387 590 CE 069 759

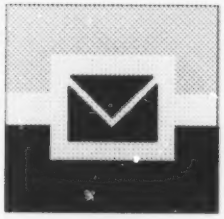
TITLE	SCANS: The Secretary's Commission on Achieving Necessary Skills/U.S. Department of Labor. A Practical Guide for Identifying and Using SCANS Competencies in Technical/Occupational Programs.
INSTITUTION	Mountain View Coll., Dallas, Tex.
PUB DATE	Sep 95
NOTE	22p.
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Community Colleges; *Competence; *Competency Based Education; *Curriculum Development; *Curriculum Evaluation; Educational Quality; Quality Control; Records (Forms); Statewide Planning; Technical Institutes; Two Year Colleges; *Vocational Education
IDENTIFIERS	*Secretarys Comm on Achieving Necessary Skills; *Texas

ABSTRACT

This booklet, which is designed primarily for college-level instructors, curriculum developers, and instructional designers, explains the processes of assessing technical and occupational courses for the Secretary's Commission on Achieving Necessary Skills (SCANS) competencies and planning for SCANS inclusion in new or existing courses and programs. Presented first is an expanded list of SCANS competencies that includes the basic SCANS workplace competencies (managing resources, exhibiting interpersonal skills, working with information, applying systems knowledge, and using technology), and foundations (demonstrating basic skills, demonstrating thinking skills, and exhibiting personal qualities such as integrity and responsibility) currently required by the Texas Higher Education Coordinating Board and recommended subcompetencies. Procedures for identifying SCANS competencies addressed in established courses/programs and matching course materials to SCANS competencies are detailed. Next, guidelines for using the SCANS competencies as a quality control/continuous improvement tool are listed and discussed. Appended are the following: sample work forms; sample workplace competency statement for course syllabi; general definitions for the SCANS competencies; lists of common action verbs for the cognitive, psychomotor, and affective domains; and list of generic objects for use in learning outcomes. (MN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 387 590



Mountain View College
4849 West Illinois Avenue
Dallas, Texas 75211-6599

SCANS

The Secretary's Commission on Achieving Necessary Skills / US Department of Labor

A Practical Guide for Identifying and Using SCANS Competencies in Technical/Occupational Programs

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

September 1995

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

A. L. Gaddis III

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

CE 069759

Table of Contents

INTRODUCTION 2

THE SCANS WORKPLACE COMPETENCIES 4

Part 1. Identifying SCANS Competencies Addressed in an Established Course or Program 5

Part 2. Using the SCANS Competencies as a Quality Control/Continuous Improvement Tool. 8

Appendix A. Sample Work Forms & Syllabus Statement 9

Appendix B. General Definitions for the SCANS Competencies 14

Appendix C. Common Action Verbs 18

Cognitive Domain 18

Psychomotor Domain 19

Affective Domain 19

Appendix D. Generic Objects for Use in Learning Outcomes 20

INTRODUCTION

In 1990, in cooperation with the U.S. Department of Labor, the Secretary's Commission of Achieving Necessary Skills (SCANS) was asked to examine the demands of the workplace and to consider whether our young people were capable of meeting those demands. Specifically, the commission was directed to advise the Secretary of Labor on the level of skills required to enter employment. In carrying out this charge, the Commission was asked to:

- Define the skills needed for employment;
- Propose acceptable levels of proficiency;
- Suggest effective ways to evaluate proficiency, and;
- Develop a dissemination strategy for the nation's schools, businesses, and homes.

The initial results of this commission's work was the development of a series of five competencies and the three-part foundation skills upon which the competencies are built.

Since that beginning, several colleges and universities have made special efforts to advance the development of these competencies and create innovative ways to incorporate them into educational programs. These efforts have typically focused on a single occupational program which served as a foundation for learning lessons that could then be more generally applied.

For all that has been done to date, much work remains. The Texas Higher Education Coordinating Board has directed colleges to take necessary action to ensure that program contents address workplace competencies and that they provide proficiency in basic work-place transferable skills, such as those defined by the SCANS report. As is often the case with such requirements, the requirement was given but the methodology was left to the institutions.

That brings me to the specific purpose of this booklet. Faculty at several colleges (especially within the Dallas County Community College District) have been exposed to the SCANS competencies and can quickly relate these competencies to their courses in a general sense. However, as research continues, there is a growing need

for a methodology that helps instructors identify the SCANS competencies that are addressed in a course in more specific terms, and to include these competencies is course syllabi.

Towards this goal, the following pages will provide guidance and forms that will help instructors, curriculum developers, instructional designers, and others:

- quickly decide what SCANS competencies are already addressed in courses;
- select SCANS competencies that you wish to incorporate into the curriculum;
- document the SCANS competencies being developed in individual courses or entire programs;
- insert a block of SCANS-related information into a course syllabus; and
- use the SCANS competencies as a quality control/continuous improvement tool.

Unlike other initiatives, this booklet is not the product of a grant-funded college or university project. Instead, is represents an effort to find simple yet accurate ways to identify and incorporate the SCANS competencies into a course or program. As such, this information is not intended to be the "only way" or the "best way" for infusing SCANS competencies into a program. For all this publication provides, it only makes a beginning for what the SCANS Commission called for. For example, there is nothing in these pages that will address the creation or use of proficiency levels for the SCANS Competencies; this is an area of continuing (and strongly needed) exploration. Rather, it serves as a starting point that will hopefully serve as a springboard for other ideas. In time there may be as many methodologies for incorporating SCANS competencies as there are recipes for making a chocolate cake. I invite your questions, comments, and ideas in this endeavor.

Ike Buddin
Curriculum Specialist
Office: 214.333.8502
FAX: 214.333.8570
Internet ALB6500@DCCCD.EDU

THE SCANS WORKPLACE COMPETENCIES

Basic SCANS competencies and foundations are shown in boldface. This table includes an expanded list of SCANS competencies. This expanded list goes beyond what is currently required by the Texas Higher Education Coordinating Board. It is recommended, however, as a better indicator of program and course effectiveness. The breakdown under each heading may be determined at the local level. For this reason, definitions in Appendix B do not necessarily correspond with the subcompetencies shown here.

SCANS WORKPLACE COMPETENCIES	SCANS FOUNDATIONS
1. Managing Resources: a. Manage time b. Manage money c. Manage materials d. Manage space e. Manage staff	**6. Demonstrating Basic Skills** a. Reading b. Writing c. Arithmetic/Mathematics d. Speaking e. Listening
2. Exhibiting Interpersonal Skills: a. Work on teams b. Teach others c. Serve customers d. Lead work teams e. Negotiate with others f. Work with different cultures	**7. Demonstrating Thinking Skills** a. Creative thinking b. Decision making c. Problem solving d. Thinking logically e. Seeing with the mind's eye
3. Working with Information: a. Acquire/evaluate data b. Organize/maintain information c. Interpret/communicate data d. Process information with computers	**8. Exhibiting Personal Qualities** a. Individual responsibility b. Self-esteem c. Sociability d. Self-management e. Integrity
4. Applying Systems Knowledge a. Work within social systems b. Work within technological systems c. Work within organizational systems d. Monitor/correct system performance e. Design/improve systems	
5. Using Technology a. Select equipment and tools b. Apply technology to specific tasks c. Maintain/troubleshoot technologies	

PART 1.

IDENTIFYING SCANS COMPETENCIES ADDRESSED IN AN ESTABLISHED COURSE OR PROGRAM

A. Matching Course Materials to SCANS Competencies.

The following information is designed to help you identify the SCANS competencies within an existing course or program. By conducting this SCANS analysis, you'll give yourself a baseline for determining how well your curriculum currently works in developing specific competencies.

Before you conduct a comparative analysis between a course and the SCANS competencies addressed in that course, there are some fundamental issues to be determined.

(1) **What course materials should I work with?** That depends on what materials you have available. Probably the best place to begin is with the syllabus. Make sure you can answer *yes* to the following questions before you start a SCANS analysis:

- ✓ Does the syllabus state specific student learning outcome statements[1] for the course?
- ✓ Does each statement have only *one* action verb[2] linked to *one* object[3]?
- ✓ Is there an adequate number of statements to effectively cover the course?
- ✓ Is there an adequate number of cognitive, psychomotor, and affective statements?

If you can answer "yes" to these questions, look no further. If not, you probably are not ready to conduct a SCANS analysis. Much depends on *how* you choose to conduct the analysis.

(2) **How should I conduct the analysis?** The techniques described below are based on the principle that you will conduct a comparative analysis (or crosswalk) between the SCANS competencies and your course content. In doing this, your approach may be extremely liberal or extremely restrictive in making the connection, or it can be somewhere in-between. The methods listed below are basically arranged from the most general approach to the most specific.

- ✲ Work with a list of courses and a list of the 8 basic SCANS competencies (*see page 4*). Match each course to the relevant competencies. (To

---

[1]Similar statements may be called course objectives, competencies, content goals, etc. All are similar in that they specify student performance.

[2]If learning outcomes contain more than one action verb, they may be revised to use only the higher-level, more inclusive verb. See pages 18-19.

[3]See page 20.

date, this methodology meets the requirements of the Texas Higher Education Coordinating Board)

- ✲ Work with a list of courses and an expanded list of SCANS competencies (*see page 4*). Match each course with the more specific SCANS competencies.

- ✲ Work with a list of course outcomes and a list of the 8 basic SCANS competencies. Match each course outcome to the SCANS competencies.

- ✲ Work with a list of course outcomes and an expanded list of SCANS competencies. Match each course outcome to the more specific SCANS competencies. *(This is the most highly recommended method, and the one most fully developed in this booklet).*

NOTE: *In the absence of learning outcomes for each course, the following approaches are probably the only ways to conduct a valid analysis.*

- ✲ Assimilate all the formal examinations, special project assignments, and other materials for which students earn a grade or must complete in the course. Using the 8 basic SCANS competencies, identify the competencies students must apply to complete each examination, project, etc.

- ✲ Collect all formal examinations, special assignments, and other materials for which students earn a grade or must complete in the course. Using the expanded list of SCANS competencies, identify the competencies students must apply to complete each examination, project, etc.

(3) **How may I document my work?** There are several ways to document a SCANS analysis. The two most common document forms are included in Appendix A. These forms are based on the use of learning outcomes (or similar statements of student achievement) and an expanded list of SCANS competencies to conduct the analysis.

(4) **How can I validate the accuracy of my work?** There are some basic questions you should ask to determine if a course outcome accurately addresses a SCANS competency. In answering these questions, you'll have to call on individual skills of subject knowledge, curriculum development, your awareness of what employers require, and how the overall program is structured. On the following page are six "tests" you may use to evaluate your decisions. *Not all of these tests are relevant to every situation, so use them with discretion.*

(✓) **The Practical Application Test.** Some instructors think that they must specifically teach a SCANS competency for it to be counted. This is not the case; the emphasis is what the student can do, not what the instructor has taught. The practical application test, therefore, asks the question, "Does the learning outcome/test item require the student to practically apply this ability?" For example, a learning outcome may require a student to use Lotus 1-2-3, a computer spreadsheet package, to develop a basic checkbook ledger. Although Lotus is a powerful mathematics tool, such an outcome would not develop a student's basic arithmetic/mathematics skills because the s/he isn't required to apply these skills to develop the ledger.

(✓) **The Domain Test.** Each SCANS competency lends itself to a particular domain (cognitive, psychomotor, or affective). For example, personal responsibility, one of the SCANS personal qualities, has an affective orientation. Processing information with computers, one of the SCANS information competencies, is primarily psychomotor. If the domain of the learning outcome matches the primary domain of the SCANS competency, it passes this test.

(✓) **The Level of Learning Test.** This is an extension of the domain test. Some SCANS competencies call for a very basic level of learning, while others imply a higher level. In the category of Technology, for example, there can be a big difference between applying technology to a particular task and having the ability to apply maintenance and troubleshooting skills (depending on the technical field). There are two questions you can ask in this area: *1) Does the action verb used in the learning outcome correlate with the general level of learning implied within the SCANS competency (See page 18)? 2) Would you expect a student to demonstrate a high level of competence in an introductory, survey, or other freshman-level course?*

(✓) **The Occupational Perspective Test.** *Would a prospective employer of your students agree that a course (or program) effectively develops a SCANS competency?* Can you identify information in a validated DACUM Chart or other job analysis to verify this? (Remember, the SCANS competencies are primarily based on workplace competencies.)

(✓) **The Logical Relationship Test.** This is another commonly-used approach, especially for cognitive-domain learning outcomes or test items. It asks the question, *"Is there a logical relationship between the learning outcome/test item and the SCANS competencies?"* You may wish to refer to the definitions in Appendix B to help validate your decisions. However, professional judgement is often the most practical and relevant approach, since Appendix B is very general in nature.

(✓) **The "Where's the Beef?" Test.** This is the single most substantial test you can apply. The "Beef" is in each test item, examination, term paper, etc. you assign to your students, where you formally hold the student accountable for a knowledge or skill. *Are you testing the students in a manner that requires them to demonstrate a SCANS competency?*

PART 2.

USING THE SCANS COMPETENCIES AS A QUALITY CONTROL/CONTINUOUS IMPROVEMENT TOOL.

I recently conducted a SCANS analysis of several courses in a Computer Information Systems program. In the basic skills section, I frequently identified that 4 out of the 5 subcompetencies were addressed in most courses; the one basic skill missing was arithmetic/mathematics. When the instructor looked at my findings, she was curious as to why I didn't check off this line item. I explained that there was nothing in the learning outcomes that indicated student development of these skills. She was shocked that this was the case, for she maintained that students did indeed have to apply such skills.

Certainly, I am a novice in her field of expertise, but if I can't find evidence that a certain competency will be needed (or developed), then probably, neither can the students (or some other important individuals).

This gives rise to a different opportunity the SCANS competencies -- especially, the expanded list -- give us. There may be dozens of ways you can ultimately use SCANS competencies as a measure of quality or to promote continuous improvement. Here is a simple recipe you may use to ensure that certain competencies are adequately addressed in a course or program:

- Before you begin a SCANS analysis, determine which SCANS competencies you want to address or build into each course. *Don't overdo it!*
- Develop or revise the curriculum content/learning outcomes for each course in the usual fashion.
- Match each learning outcome with the SCANS competencies as addressed in Part 1. Validate your results as described in Part 2.
- Refer to the original list of SCANS competencies you intended to address. If any originally-identified SCANS competencies aren't addressed, revise the curriculum as needed to meet your original goals.

Appendix A.

Sample Work

Forms

and

Syllabus Statement

Course/Semester: _____ Instructor: _____	**Relevant Competencies** (Identify by Competency Number)
SCANS COMPETENCIES.	
1. Managing Resources:	
a. Manage time	a.
b. Manage money	b.
c. Manage materials	c.
d. Manage space	d.
e. Manage staff	e.
2. Exhibiting Interpersonal Skills:	
a. Work on teams	a.
b. Teach others	b.
c. Serve customers	c.
d. Lead work teams	d.
e. Negotiate with others	e.
f. Work with different cultures	f.
3. Working with Information:	
a. Acquire/evaluate data	a.
b. Organize/maintain information	b.
c. Interpret/communicate data	c.
d. Process information with computers	d.
4. Applying Systems Knowledge	
a. Work within social systems	a.
b. Work within technological systems	b.
c. Work within organizational systems	c.
d. Monitor/correct system performance	d.
e. Design/improve systems	e.
5. Using Technology	
a. Select equipment and tools	a.
b. Apply technology to specific tasks	b.
c. Maintain/troubleshoot technologies	c.
SCANS FOUNDATIONS	
6. Demonstrating Basic Skills	
a. Reading	a.
b. Writing	b.
c. Arithmetic/Mathematics	c.
d. Speaking	d.
e. Listening	e.
7. Demonstrating Thinking Skills	
a. Creative thinking	a.
b. Decision making	b.
c. Problem solving	c.
d. Thinking logically	d.
e. Seeing with the mind's eye	e.
8. Exhibiting Personal Qualities	
a. Individual responsibility	a.
b. Self-esteem	b.
c. Sociability	c.
d. Self-management	d.
e. Integrity	e.

PROGRAM SUMMARY FORM: SCANS Competencies and Foundations	Program Courses (Include all required academic and technical courses in the program)									
Program: _____ *Place a check in the appropriate space for each subcompetency addressed*										
1. Managing Resources:										
a. Manage time										
b. Manage money										
c. Manage materials										
d. Manage space										
e. Manage staff										
2. Exhibiting Interpersonal Skills:										
a. Work on teams										
b. Teach others										
c. Serve customers										
d. Lead work teams										
e. Negotiate with others										
f. Work with different cultures										
3. Working with Information:										
a. Acquire/evaluate data										
b. Organize/maintain information										
c. Interpret/communicate data										
d. Process info. with computers										
4. Applying Systems Knowledge										
a. Work within social systems										
b. Work within technological systems										
c. Work within organizational systems										
d. Monitor/correct system performance										
e. Design/improve systems										
5. Using Technology										
a. Select equipment and tools										
b. Apply technology to specific tasks										
c. Maintain/troubleshoot technologies										

SCANS FOUNDATIONS										
6. Demonstrating Basic Skills										
a. Reading										
b. Writing										
c. Arithmetic/Mathematics										
d. Speaking										
e. Listening										
Demonstrating Thinking Skills										
a. Creative thinking										
b. Decision making										
c. Problem solving										
d. Thinking logically										
e. Seeing with the mind's eye										
8. Exhibiting Personal Qualities										
a. Individual responsibility										
b. Self-esteem										
c. Sociability										
d. Self-management										
e. Integrity										

Workplace Competency Statement for Course Syllabi

NOTE: *This sample includes all of the subcompetencies cited in this booklet. Delete those that do not apply to the course.*

Statement of Workplace and Foundation Competencies

This college/university is determined to prepare you with the knowledges and skills you need to succeed in today's dynamic work environment. Towards this end, the following workplace competencies and foundation skills have been designed into the curriculum for this course:

COMMON WORKPLACE COMPETENCIES

Manage Resources:	Time / Money / Materials / Space / Staff
Exhibit Interpersonal Skills:	Work on teams / Teach others / Serve customers / Lead work teams / Negotiate with others / Work with different cultures
Work with Information:	Acquire & evaluate data / Organize & maintain information Interpret & communicate data / Process information with computers
Apply Systems Knowledge:	Work within social systems / Work within technological systems Work within organizational systems / Monitor & correct system performance / Design & improve systems
Use Technology:	Select equipment and tools / Apply technology to specific tasks Maintain & troubleshoot technologies

FOUNDATION SKILLS

Demonstrate Basic Skills:	Reading / Writing / Arithmetic & Mathematics / Speaking / Listening
Demonstrate Thinking Skills:	Creative thinking / Decision making / Problem solving / Thinking logically / Seeing with the mind's eye
Exhibit Personal Qualities:	Individual responsibility / Self-esteem / Sociability / Self-management / Integrity

---

Appendix B

General Definitions for the SCANS Competencies

These definitions are reproduced from "What Work Requires from Schools; A SCANS Report for America 2000," Appendices B and C.

RESOURCES

Manages Time Selects relevant, goal-related activities, ranks them in order of importance, allocates time to activities, and understands, prepares, and follows schedules.

Manages Money Uses or prepares budgets, including making cost and revenue forecasts; keeps detailed records to track budget performance; and makes appropriate adjustments.

Manages Material and Facility Resources Acquires, stores, and distributes materials, supplies, parts, equipment, space, or final products in order to make the best use of them.

Manages Human Resources Assesses knowledge and skills, distributes work accordingly, evaluates performance, and provides feedback.

INTERPERSONAL SKILLS

Participates as a Member of a Team Works cooperatively with others and contributes to group efforts with ideas, suggestions, and effort.

Teaches Others Helps others learn needed knowledge and skills.

Serves Clients/Customers Works and communicates with clients and customers to satisfy their expectations.

Exercises Leadership Communicates thoughts, feelings, and ideas to justify a position, encourage, persuade, convince, or otherwise motivate an individual or groups, including responsibility challenging existing procedures, policies or authority.

Negotiates to Arrive at a Decision Works toward an agreement that may involve exchanging specific resources or resolving divergent interests.

Works with Cultural Diversity Works well with men and women and with people from a variety of ethnic, social, or educational backgrounds.

INFORMATION

Acquires and Evaluates Information Identifies a need for data, obtains the data from existing sources or creates them, and evaluates their relevance and accuracy.

Organizes and Maintains Information Organizes, processes, and maintains written or computerized records and other forms of information in a systematic fashion.

Interprets and Communicates Information Selects and analyzes information and communicates the results to others using oral, written, graphic, pictorial, or multimedia methods.

Uses Computers to Process Information Employs computers to acquire, organize, analyze, and communicate information.

SYSTEMS

Understands Systems Knows how social, organizational, and technological systems work and operates effectively within them.

Monitors and Corrects Performance Distinguishes trends, predicts impacts of actions on system operations, diagnoses deviations in the functioning of a system/organization, and takes necessary action to correct performance.

Improves and Designs Systems Makes suggestions to modify existing systems in order to improve the quality of products or services and develops new or alternative systems.

TECHNOLOGY

Selects Technology Judges which sets of procedures, tools, or machines, including computers and their programs, will produce the desired results.

Applies Technology to Task Understands the overall intents and the proper procedures for setting up and operating machines, including computers and their programming systems.

Maintains and Troubleshoots Technology Prevents, identifies, or solves problems in machines, computers and other technologies.

THE FOUNDATION SKILLS

BASIC SKILLS

Reading Locates, understands, and interprets written information in prose and documents--including manuals, graphs, and schedules--to perform tasks; learns from text by determining the main idea or essential message; identifies relevant details, facts, and specifications; infers or locates the meaning of unknown or technical vocabulary; and judges the accuracy, appropriateness, style, and plausibility of reports, proposals, or theories of other writers.

Writing Communicates thoughts, ideas, information, and messages in writing; records information completely and accurately; composes and creates documents such as letters, directions, manuals, reports, proposals, graphic and flow charts with the language, styles, organization, and format appropriate to the subject matter, purpose, and audience; includes, where appropriate, supporting documentation, and attends to level of detail; and checks, edicts, and revises for correction information, appropriate emphasis, form, grammar, spelling, and punctuation.

Arithmetic Performs basic computations; uses basic numerical concepts such as whole numbers and percentages in practical situations; makes reasonable estimates of arithmetic results without a calculator; and uses tables, graphs, diagrams, and charts to obtain or convey quantitative information.

Mathematics Approaches practical problems by choosing appropriately from a variety of mathematical techniques; uses quantitative data to construct logical explanations for real world situations; expresses mathematical ideas and concepts orally and in writing; and understands the role of chance in the occurrence and prediction of events.

Listening Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to the purpose--for example, to comprehend, learn, critically evaluate, appreciate, or support the speaker.

Speaking Organizes ideas and communicates oral messages appropriate to listeners and situations; participates in conversation, discussion, and group presentations; selects an appropriate medium for conveying a message; uses verbal language and other cues such as body language in a way appropriate in style, tone, and level of complexity to the audience and the occasion; speaks clearly and communicates a message; understands and responds to listener feedback; and asks questions when needed.

THINKING SKILLS

Creative Thinking Generates new ideas by making nonlinear or unusual connections, new possibilities; and uses imagination freely, combining ideas or information in new ways, making connections between seemingly unrelated ideas, and reshaping goals in ways that reveal new possibilities.

Decision Making Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternatives.

Problem Solving Recognizes that a problem exists (i.e., that there is a discrepancy between what is and what should be); identifies possible reasons for the discrepancy, and devises and implements a plan for action to resolve it; and evaluates and monitors progress, revising the plan as indicated by findings.

Mental Visualization Sees things in the mind's eye by organizing and processing symbols, pictures, graphs, objects, or other information--for example, sees a building from a blueprint, a system's operation from schematics, the flow of work activities from narrative descriptions, or the taste of food from reading a recipe.

Knowing How to Learn Recognizes and can use learning techniques to apply and adapt existing and new knowledge and skill sin both familiar and changing situations; and is aware of learning tools such as personal learning styles (visual, aural, etc.), formal learning strategies (note taking or clustering items that share some characteristics), and informal learning strategies (awareness of unidentified false assumptions that may lead to faulty conclusions).

Reasoning Discovers a rule or principle underlying the relationship between two or more objects and applies it in solving a problem--for example, uses logic to draw conclusions from available information, extracts rules or principles from a set of objects or a written text, or applies rules and principles to a new situation (or determines which conclusions are correct when given a set of facts and conclusions).

PERSONAL QUALITIES

Responsibility Exerts a high level of effort and perseverance toward goal attaintment; works hard to become excellent at doing tasks by setting high standards, paying attention to details, working well even when assigned an unpleasant task, and displaying a high level of concentration; and displays high standards of attendance, punctuality, enthusiasm, vitality, and optimism in approaching and completing tasks.

Self-Esteem Believes in own self-worth and maintains a positive view of self, demonstrates knowledge of own skills and abilities, is aware of one's impression on others, and knows own emotional capacity and needs and how to address them.

Sociability Demonstrates understanding, friendliness, adaptability, empathy, an politeness in new and ongoing group settings; asserts self in familiar and unfamiliar social situations; relates well to others; responds appropriately as the situation requires; and takes an interest in what others say and do.

Self-Management Accurately assesses own knowledge, skills, and abilities; sets well-defined and realistic personal goals; monitors progress toward goal attainment and motivates self through goal achievement; and exhibits self-control and responds to feedback unemotionally and nondefensively.

Integrity/Honesty Recognizes when being faced with making a decision or exhibiting behavior that may break with commonly held personal or societal values; understands the effects of violating these beliefs and codes on an organization, oneself, and others; and chooses an ethical course of action.

Appendix C

Common Action Verbs

COGNITIVE DOMAIN
C1: Fact C2: Understanding C3: Application

address	C1-2	design	C1-3	outline	C1-2
analyze	C1-3	detect	C1-2	plan	C1-3
apply	C1-3	determine	C1-2	predict	C1-3
arrange	C1-2	develop	C1-3	prescribe	C1-3
assess	C1-3	diagram	C1-3	quote	C1
assist	C1-2	differentiate	C1-2	recall	C1
associate	C1	enumerate	C1-2	recite	C1
breakdown	C1-2	estimate	C1-3	record	C1-2
build	C1-3	examine	C1-2	reiterate	C1
calculate	C1-3	explain	C1-3	repeat	C1
categorize	C1-2	form	C1-3	reply	C1
check	C1-3	formulate	C1-3	reproduce	C1
choose	C1-2	group	C1-2	restate	C1
cite	C1	identify	C1	say	C1
classify	C1-2	illustrate	C1-2	select	C1-2
combine	C1-2	indicate	C1	sequence	C1-2
compare	C1-2	inspect	C1-3	solve	C1-3
complete	C1-2	interpret	C1-3	specify	C1
compute	C1-3	label	C1	state	C1
connect	C1-3	list	C1	subdivide	C1-3
construct	C1-3	locate	C1-2	synthesize	C1-3
contrast	C1-2	make	C1-3	tabulate	C1
convert	C1-3	manage	C1-3	tell	C1
count	C1-2	measure	C1-3	test	C1-3
create	C1-3	modify	C1-3	trace	C1-2
critique	C1-3	name	C1	troubleshoot	C1-3
define	C1	order	C1-3	validate	C1-3
describe	C1-2	organize	C1-3	verify	C1-3

PSYCHOMOTOR DOMAIN

P1: Imitation P2: Practice P3: Habit

NOTE: These verbs may be used at any level of learning, depending on the conditions and standards established.

activate	hone	recondition
adjust	insert	remove
align	install	repack
assemble	letter	repair
backflush	lift	replace
balance	listen	respond
bleed	load	rotate
center	loosen	separate
change	lubricate	serve
charge	machine	set
clean	manipulate	show
close	mark-up	signal
copy	mount	slide
cut	move	speak
disassemble	open	stencil
discharge	operate	tap
disconnect	perform	tighten
display	place	torque
distinguish	prepare	touch
drape	prime	transcribe
draw	produce	transfer
duplicate	press	tune
evacuate	proof	turn
file	pull	type
fill	purchase	use
flash	push	weld
grasp	read	winterize
grind	reassemble	write
heat	rebuild	zoom
hold		

AFFECTIVE DOMAIN

A1: Awareness A2: Distinguish A3: Integrate

NOTE: These verbs may be used at any level of learning, depending on the conditions and standards established.

demonstrate	exhibit

Appendix D

GENERIC OBJECTS FOR USE IN LEARNING OUTCOMES

activities
advantages
attitudes
biases
capabilities

capacities
characteristics
components
concepts
consequences

controls
cycles
designs
developments
dynamics

effects
elements
examinations
examples
factors

features
functions
fundamentals
goals
habits

interactions
issues

mechanisms
methodologies
methods
mockups
models

options
origins
paradigms
perspectives
processes

principles
relationships
requirements
responsibilities
roles

rules
skills
sources
stages
states

structures
systems
terms
tests
theories

trends
variations